OMAP3530 WinCE Digital Video Software Development Kit (DVSDK)

DVSDK WinCE 1.00.00.05

Release Notes Dec 04, 2009

Important Note: Users must install the OMAP3530 WINCE DVSDK in order to access certain documentation hyperlinks in this document.

Introduction

This is the first DVSDK WinCE 100 source release targeted for OMAP3530 EVM.

The DVSDK WinCE 100 product release is supported on OMAP35x EVM platform. This DVSDK, coupled with WinCE board support package, gives developers the ability to evaluate the hardware and software capabilities of the OMAP35x EVM platform with WinCE 6.0 R2/R3. Developers will be able to evaluate the ARM WinCE programming environment and easily utilize the powerful hardware support of the OMAP3530 SoC for various audio, video, speech and image codecs.

This document is divided into the following sections:

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Features

This DVSDK release includes support for OMAP3530 and OMAP3525 with the following features and has been tested with WinCE Board Support Package (BSP) R6.12.03:

- Support for OMAP35x ES3.1 Silicon version with 256MB LPDDR
- Backward compatible with OMAP35x ES2.1 Silicon version with 128MB LPDDR.
- XDM 1.0 Codecs from TI.

  - Audio: AAC LC/HE Decoder
  - Image: JPEG Encoder/Decoder
  - Speech: G.711 Encoder/Decoder
  - Video: H.264 BP Encoder/Decoder, MPEG4 SP Encoder/Decoder, MPEG2 Decoder

- DirectShow Filters
  - H.264 video decode directshow filter
  - MPEG4 video decode directshow filter
  - MPEG2 video decode directshow filter
- DVSDK Demos and apps:
  - DMAI apps for performing file based decode and encode operations.
  - WMP to exercise media playback.
- Digital Video Test Bench is not supported with this release.
- WinCE 6.0 R2/R3 supported

Documentation

- DVSDK WinCE 100 Getting Started Guide - Hardware and software overview, including how to run demos, install software, and build the demos. Latest Getting Started Guide can be found online here
- Codec Engine Release Notes
- Framework Components Release Notes
- OMAP3530 Codec Server Release Notes
- DaVinci Multimedia Application Interface (DMAI) Release Notes
- Direct Show Filters (dshow) Release Notes
- DSP/BIOS LINK Release Notes
- DSP/BIOS Utilities Release Notes
- EDMA3 Low Level Driver Release Notes
- WinCE Utils Release Notes
- XDAIS Release Notes

DVSDK Package Contents

The DVSDK contains the following components:

biosutils_1_02_02	BIOS Utilities
winceutils_1_00_02	Contiguous memory allocator for WinCE
codec_engine_2_24_01	The Codec Engine provides a framework for creating and interacting with multimedia codecs
dmai_1_24_00_07	DaVinci Multimedia Application Interface

dshow_1_00_00_07	TI Directshow multimedia filters.
dsplink_1_64	Foundation software for the inter-processor communication across the GPP-DSP boundary.
framework_components_2_24_01	Framework Components is a collection of framework-independent utility libraries which other software frameworks can build upon.
cs1omap3530_1_00_01	Codec Server for decoding and encoding video, audio, speech and image.
local_power_manager_1_24_01	Local Power Manager for DSP
edma3_lld_01_06_00_01	EDMA3 Low Level Driver containing Resource Manager and Driver
xdais_6_24_01_06	xDAIS product contains the DSP Algorithm Interface Standard specification and related documentation and examples.

A detailed DVSDK WinCE software manifest can be found [here](#)

The DVSDK depends on the following tools/components:

bSquare WinCE 6.0 BSP Release 6.12.03 or later	BSP for WinCE 6.0 R2/R3.
bios_5_33_05	Stand-alone DSP/BIOS.
xdctools_3_10_05_61	TI XDC tool.
cg6x_6_1_9	TI C6x CodeGen tools.
ActivePerl5.8	Active Perl

The DVSDK release is shipped with prebuilt components and these tools (except XDCTOOLS) are needed only for recompiling the individual components. XDCTOOLS is needed for DVSDK binary installation as well.

Important Note: install XDCTOOLS and TI CodeGen tools in directories that don't have any spaces in their path name (default installation path for these tools may have spaces). Some of the DVSDK component builds fail if there are spaces in the installation path of these tools.

Installation and Usage

Please follow the [Getting Started Guide](#) for detailed installation and usage instructions.

Upgrade and Compatibility Information

The OMAP3530 DVSDK release is independently installable. No upgrade instructions are available with this release.

Host Support

This release supports installation and development on Windows XP workstations.

Dependencies

The only known dependencies are listed here.

Device Support

This release supports the Texas Instruments OMAP3530 and OMAP3525 SoC. The verification was done on the OMAP35x Evaluation Module (TMDXEVM3503 and TMDSEVM3530)

Validation Information

A sanity test of the DVSDK WinCE 100 build 1_00_00_05 was performed before release to the system test team. The sanity test covered the following tests. The validation was done on OMAP35x EVM.

- Play AVI files with MPEG2, MPEG4 and H264 video decoder and MP3 audio decoder using Windows Media Player. Some of the test clips used for testing and benchmarking can be found here. http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/media/wince/index_FDS.html
- Run DMAI demonstration applications as described in Getting Started Guide.

In addition this release has gone through a complete QA cycle.

Exceptions and Known Issues

- MP3 playback can only be done on the ARM. This results in higher ARM-side CPU load.
- Only AVI containers are supported.
- AV synchronization is sometimes off for H.264 video clips at D1 resolution when the bitrate is high (e.g. >= 2Mbps) on Omap3530 ES2.1 silicon reading the media files from SD card. Performance can be improved by using ES 3.1 silicon with multiple block reads enabled for the SDIO driver.
- WMP cannot be run at the same time as DMAI applications, due to lack of an arbitrator of DSPLINK resources.
- When performing jpeg image encode using DMAI application of an image with dimension (height or width) that is not a multiple of 16, leads to distorted output. This is a JPEG encoder known limitation.
- When performing jpeg image encode using DMAI application, it was observed that using qfactor above 96 leads to misalignment in output image.

- When performing AAC audio decode using DMAI application, high tone heard in decoded file after an aac decode operation.
- When performing AAC audio decode using DMAI application, Mono files are decoded as dualmono during aac decode operations.
- DMAI application does not support 411p and 422i as possible chroma formats
- The default CMEM configuration allows JPEG encode and decode of images with resolutions upto 1280x720 (1MPixel) with YUV444, YUV422, YUV420 formats. Images of higher resolution can be encoded/decoded with appropriate increase in CMEM buffer configuration within limits of available memory
- Rotation may not work for Video codecs that are part of WinCE 6.0 running on ARM (e.g, MPEG1 video, WMV video). These codecs do not handle the stride information properly. Please contact Microsoft for further details.
- SDOCM00057731: MPEG2 Decoder: Flicker is observed at top of the display while decoding Mpeg2 streams of resolution 352x240 with video decode
- SDOCM00062310: MPEG2 Decoder: Generated yuv resolution is not same as the input stream resolution for some MP streams
- SDOCM00060533: MPEG2 Decoder: Unable to decode certain clips @ QCIF resolution

For latest list of known issues, please click on issues list. If this is your first time accessing this database please create an account here

Defects Fixed in DVSDK WinCE 1.00.00.05

- Updated direct show filters enable Video Rotation using VRFB for Video codecs running on the DSP (H.264 decode, MPEG2 decode, MPEG4 decode).
- Optimization in Multimedia framework, higher DSP clock speed as well as adjustment in display driver buffer settings improves multimedia performance. H.264 video clips at D1 resolution with bitrates of upto 2Mbps can be played without any AV sync issue on ES2.1 silicon with media files on SD card. MPEG2 and MPEG4 video clips at D1 resolution with bitrates upto 4Mbps can be played without AV sync issues. Performance is further improved by using ES 3.1 silicon with multiple block reads enabled for the SDIO driver.

Defects Fixed in DVSDK WinCE 1.00.00.04

- CERuntime_exit() API is called by TI multimedia filter when closing Windows Media Player. This should free up unused resources.
- Benchmarking (--benchmark option) is now supported in DMAI applications
- WMP hangs due to exception in timm.dll when unsupported input file is selected

Defects Fixed in DVSDK WinCE 1.00.00.03

- Reducing the window size of the Windows Media Player to a size smaller than the frame size may result in corrupted output.
- Video display is corrupted when part of the display window lies outside the LCD display.
- Directshow filters do not meet real-time and display is corrupted when video renderer operates in GDI mode (ie. when Windows Media Player is hidden by another window). This is because GDI mode requires YUV to RGB conversion of the DSP codec output frames.
- DMAI Video Encode - for both H.264 and MPEG4 files, error pertaining to contiguous buffer causes failure
- DMAI Image Encode - CMEM configurations to be provided for 1920x1280 and above resolutions

Limitations

Special Notes

- In order to experience the demos and apps that comes with DVSDK WinCE 100, please refer to the Getting Started Guide.

Technical Support and Product Updates

Please register your EVM serial number as instructed on the printed Read Me 1st Card in order to download the updated software release as soon as it becomes available.

- For questions and support on the DVSDK WinCE 100, please visit support.ti.com.
- Please be sure to read the Digital Video Software Development Kit (DVSDK) release notes, printed documentation and Getting Started Guide for general information.
- A developer wiki site is available at http://wiki.davincidsp.com/index.php?title=Main_Page. For information on OMAP35x, search for OMAP35x in the google toolbar embedded in the page. User contributions are encouraged.